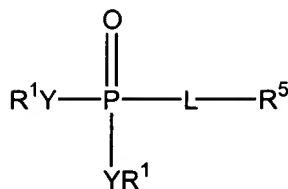
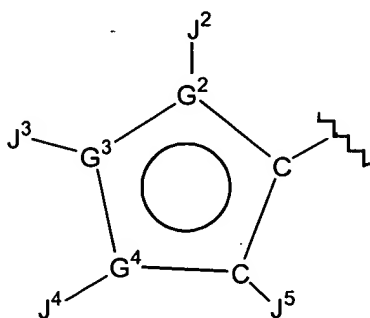


1. A compound of formula (I):



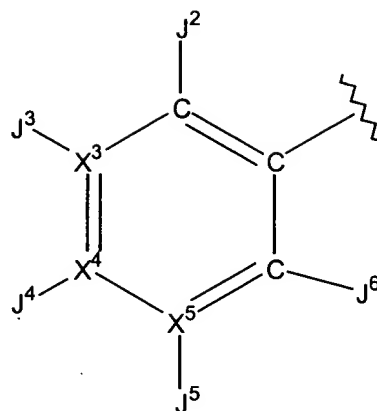
(I)

wherein R⁵ is selected from the group consisting of:



I (a)

and



I (b)

wherein:

G² is selected from the group consisting of C, O, and S;

G³ and G⁴ are independently selected from the group consisting of C, N, O, and S;

wherein a) not more than one of G², G³, and G⁴ may be O, or S; b) when G² is O or S, not more than one of G³ and G⁴ is N; c) at least one of G², G³, and G⁴ is C; and d) G², G³, and G⁴ are not all C;

X³, X⁴, and X⁵ are independently selected from the group consisting of C and N, wherein no more than two of X³, X⁴, and X⁵ may be N;

J², J³, J⁴, J⁵, and J⁶ are independently selected from the group consisting of -H, -NR⁴₂, -CONR⁴₂, -CO₂R³, halo, -S(O)₂NR⁴₂, -S(O)R³, -SO₂R³, alkyl, alkenyl, alkynyl, alkylenearyl, perhaloalkyl, haloalkyl, aryl, heteroaryl, alkylene-OH, -C(O)R¹¹, -OR¹¹, -alkylene-NR⁴₂, -alkylene-CN, -CN, -C(S)NR⁴₂, -OR², -SR², -N₃, -NO₂, -NHC(S)NR⁴₂, and -NR¹⁸COR²;

L is selected from the group consisting of:

B³
 i) a linking group having 2-4 atoms measured by the fewest number of atoms connecting the carbon of the aromatic ring and the phosphorus atom and is selected from the group consisting of -furanyl-, -thienyl-, -pyridyl-, -oxazolyl-, -imidazolyl-, -phenyl-, -pyrimidinyl-, -pyrazinyl-, and -alkynyl-, all of which may be optionally substituted; and

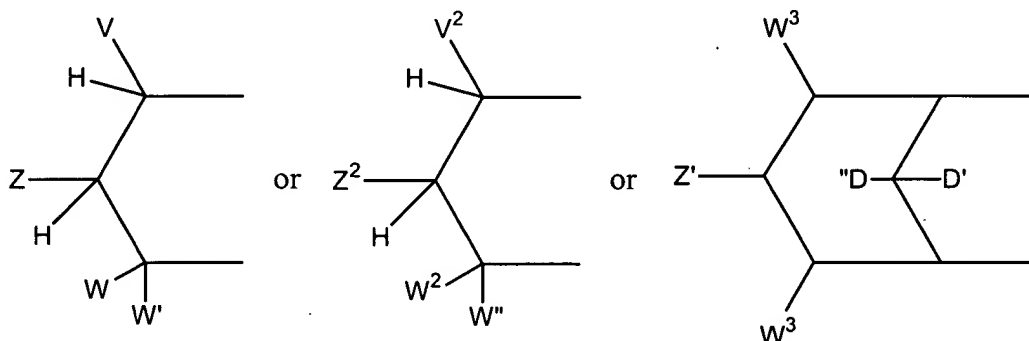
ii) a linking group having 3-4 atoms measured by the fewest number of atoms connecting the carbon of the aromatic ring and the phosphorus atom and is selected from the group consisting of -alkylenecarbonylamino-, -alkyleneaminocarbonyl-, -alkyleneoxycarbonyl-, -alkyleneoxy-, and -alkyleneoxyalkylene-, all of which may be optionally substituted;

Y is independently selected from the group consisting of -O-, and -NR⁶-;

when Y is -O-, then R¹ attached to -O- is independently selected from the group consisting of -H, alkyl, optionally substituted aryl, optionally substituted alicyclic where the cyclic moiety contains a carbonate or thiocarbonate, optionally substituted arylalkylene-, -C(R²)₂OC(O)NR²₂, -NR²-C(O)-R³, -C(R²)₂-OC(O)R³, -C(R²)₂-O-C(O)OR³, -C(R²)₂OC(O)SR³, -alkylene-S-C(O)R³, -alkylene-S-S-alkylenehydroxy, and -alkylene-S-S-S-alkylenehydroxy,

when one Y is -NR⁶-, and R¹ attached to it is -(CR¹²R¹³)_n-C(O)-R¹⁴, then the other YR¹ is selected from the group consisting of -NR¹⁵R¹⁶, -OR⁷, and NR⁶-(CR¹²R¹³)_n-C(O)-R¹⁴;

or when either Y is independently selected from -O- and -NR⁶-, then together R¹ and R¹ are -alkylene-S-S-alkylene- to form a cyclic group, or together R¹ and R¹ are



wherein

a) V is selected from the group of aryl, substituted aryl, heteroaryl, substituted heteroaryl, 1-alkynyl and 1-alkenyl;

B³
Z is selected from the group of $-\text{CHR}^2\text{OH}$, $-\text{CHR}^2\text{OC}(\text{O})\text{R}^3$, $-\text{CHR}^2\text{OC}(\text{S})\text{R}^3$, $-\text{CHR}^2\text{OC}(\text{S})\text{OR}^3$, $-\text{CHR}^2\text{OC}(\text{O})\text{SR}^3$, $-\text{CHR}^2\text{OCO}_2\text{R}^3$, $-\text{OR}^2$, $-\text{SR}^2$, $-\text{CHR}^2\text{N}_3$, $-\text{CH}_2\text{aryl}$, $-\text{CH}(\text{aryl})\text{OH}$, $-\text{CH}(\text{CH}=\text{CR}^2_2)\text{OH}$, $-\text{CH}(\text{C}\equiv\text{CR}^2)\text{OH}$, $-\text{R}^2$, $-\text{NR}^2_2$, $-\text{OCOR}^3$, $-\text{OCO}_2\text{R}^3$, $-\text{SCOR}^3$, $-\text{SCO}_2\text{R}^3$, $-\text{NHCOR}^2$, $-\text{NHCO}_2\text{R}^3$, $-\text{CH}_2\text{NHaryl}$, $-(\text{CH}_2)_p\text{-OR}^{19}$, and $-(\text{CH}_2)_p\text{-SR}^{19}$; or

together V and Z are connected via an additional 3-5 atoms to form a cyclic group, optionally containing 1 heteroatom, said cyclic group is fused to an aryl group at the beta and gamma position to the Y adjacent to V; or

together Z and W are connected via an additional 3-5 atoms to form a cyclic group, optionally containing one heteroatom, and V must be aryl, substituted aryl, heteroaryl, or substituted heteroaryl; or

W and W' are independently selected from the group of -H, alkyl, aralkyl, alicyclic, aryl, substituted aryl, heteroaryl, substituted heteroaryl, 1-alkenyl and 1-alkynyl and $-\text{R}^9$; or

together W and W' are connected via an additional 2-5 atoms to form a cyclic group, optionally containing 0-2 heteroatoms, and V must be aryl, substituted aryl, heteroaryl, or substituted heteroaryl;

b) V^2 , W^2 and W'' are independently selected from the group of -H, alkyl, aralkyl, alicyclic, aryl, substituted aryl, heteroaryl, substituted heteroaryl, 1-alkenyl, and 1-alkynyl;

Z^2 is selected from the group of $-\text{CHR}^2\text{OH}$, $-\text{CHR}^2\text{OC}(\text{O})\text{R}^3$, $-\text{CHR}^2\text{OC}(\text{S})\text{R}^3$, $-\text{CHR}^2\text{OCO}_2\text{R}^3$, $-\text{CHR}^2\text{OC}(\text{O})\text{SR}^3$, $-\text{CHR}^2\text{OC}(\text{S})\text{OR}^3$, $-\text{CH}(\text{aryl})\text{OH}$, $-\text{CH}(\text{CH}=\text{CR}^2_2)\text{OH}$, $-\text{CH}(\text{C}\equiv\text{CR}^2)\text{OH}$, $-\text{SR}^2$, $-\text{CH}_2\text{NHaryl}$, $-\text{CH}_2\text{aryl}$; or

together V^2 and Z^2 are connected via an additional 3-5 atoms to form a cyclic group containing 5-7 ring atoms, optionally containing 1 heteroatom, and substituted with hydroxy, acyloxy, alkyleneoxycarbonyloxy, or aryloxy carbonyloxy attached to a carbon atom that is three atoms from a Y attached to phosphorus;

c) Z' is selected from the group of $-\text{OH}$, $-\text{OC}(\text{O})\text{R}^3$, $-\text{OCO}_2\text{R}^3$, and $-\text{OC}(\text{O})\text{SR}^3$;

D' is -H;

D'' is selected from the group of -H, alkyl, $-\text{OR}^2$, $-\text{OH}$, and $-\text{OC}(\text{O})\text{R}^3$;

each W^3 is independently selected from the group consisting of -H, alkyl, aralkyl, alicyclic, aryl, substituted aryl, heteroaryl, substituted heteroaryl, 1-alkenyl, and 1-alkynyl;

p is an integer 2 or 3;

with the provisos that:

a) V, Z, W, W' are not all -H and V^2 , Z^2 , W^2 , W'' are not all -H; and

R^2 is selected from the group consisting of R^3 and -H;

R^3 is selected from the group consisting of alkyl, aryl, alicyclic, and aralkyl;

each R^4 is independently selected from the group consisting of -H, alkylene, -alkylenearyl and aryl, or together R^4 and R^4 are connected via 2-6 atoms, optionally including one heteroatom selected from the group consisting of O, N, and S;

R^6 is selected from the group consisting of -H, lower alkyl, acyloxyalkyl, aryl, aralkyl, alkyloxycarbonyloxyalkyl, and lower acyl, or together with R^{12} is connected via 1-4 carbon atoms to form a cyclic group;

R^7 is lower R^3 ;

each R^9 is independently selected from the group consisting of -H, alkyl, aralkyl, and alicyclic, or together R^9 and R^9 form a cyclic alkyl group;

R^{11} is selected from the group consisting of alkyl, aryl, $-NR^2_2$, and $-OR^2$; and

each R^{12} and R^{13} is independently selected from the group consisting of H, lower alkyl, lower aryl, lower aralkyl, all optionally substituted, or R^{12} and R^{13} together are connected via a chain of 2-6 atoms, optionally including 1 heteroatom selected from the group consisting of O, N, and S, to form a cyclic group;

each R^{14} is independently selected from the group consisting of $-OR^{17}$, $-N(R^{17})_2$, $-NHR^{17}$, $-SR^{17}$, and $-NR^2OR^{20}$;

R^{15} is selected from the group consisting of -H, lower aralkyl, lower aryl, lower aralkyl, or together with R^{16} is connected via 2-6 atoms, optionally including 1 heteroatom selected from the group consisting of O, N, and S;

R^{16} is selected from the group consisting of $-(CR^{12}R^{13})_n-C(O)-R^{14}$, -H, lower alkyl, lower aryl, lower aralkyl, or together with R^{15} is connected via 2-6 atoms, optionally including 1 heteroatom selected from the group consisting of O, N, and S;

B³ each R¹⁷ is independently selected from the group consisting of lower alkyl, lower aryl, and lower aralkyl, or together R¹⁷ and R¹⁷ on N is connected via 2-6 atoms, optionally including 1 heteroatom selected from the group consisting of O, N, and S;

R¹⁸ is selected from the group consisting of -H and lower R³;

R¹⁹ is selected from the group consisting of -H, and lower acyl;

R²⁰ is selected from the group consisting of -H, lower R³, and -C(O)-(lower R³);

n is an integer from 1 to 3;

with the provisos that:

- 1) when X³, X⁴, or X⁵ is N, then the respective J³, J⁴, or J⁵ is null;
 - 2) when L is substituted furanyl, then at least one of J², J³, J⁴, and J⁵ is not -H or null;
 - 3) when L is not substituted furanyl, then at least two of J², J³, J⁴, and J⁵ on formula I(a) or J², J³, J⁴, J⁵, and J⁶ on formula I(b) are not -H or null;
 - 4) when G², G³, or G⁴ is O or S, then the respective J², J³, or J⁴ is null;
 - 5) when G³ or G⁴ is N, then the respective J³ or J⁴ is not halogen or a group directly bonded to G³ or G⁴ via a heteroatom;
 - 6) if both Y groups are -NR⁶-, and R¹ and R¹ are not connected to form a cyclic phosphoramidate, then at least one R¹ is -(CR¹²R¹³)_n-C(O)-R¹⁴;
 - 7) when L is -alkylenecarbonylamino- or -alkyleneaminocarbonyl-, then X³, X⁴, and X⁵ are not all C;
 - 8) when L is -alkeneoxyalkylene-, and X³, X⁴, and X⁵ are all C, then neither J³ nor J⁵ can be substituted with an acylated amine;
 - 9) when R⁵ is substituted phenyl, then J³, J⁴, and J⁵ is not purinyl, purinylalkylene, deazapurinyl, or deazapurinylalkylene;
 - 10) R¹ can be selected from the lower alkyl only when the other YR¹ is -NR⁶-C(R¹²R¹³)_n-C(O)-R¹⁴;
 - 11) when R⁵ is substituted phenyl and L is 1,2-ethynyl, then J³ or J⁵ is not a heterocyclic group;
 - 12) when L is 1,2-ethynyl, then X³ or X⁵ cannot be N;
- and pharmaceutically acceptable prodrugs and salts thereof;
- 13) when R⁵ is substituted phenyl and L is -alkyleneoxycarbonyl-, then J³ or J⁵ is not O-aryl;